TECHNICAL REVIEW DOCUMENT FOR OPERATING PERMIT 95OPPR069

to be issued to:

Lamar Utilities Board Lamar Light and Power Prowers County Facility ID 0990006

Prepared on December 4, 1996 Revised on April 14, 1997 Peter K. Nelson, Review Engineer

I. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Colorado Title V Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA, during Public Comment, and for other interested parties. Information in this report is primarily from the application received on September 21, 1995 and additional information received on March 20, 1996 and April 8, 1997. In addition, a site visit was conducted on May 13, 1996 to confirm the information in the application.

II. Source Description

This facility generates electricity for primary, emergency, and peaking use and is classified under the Standard Industrial Classification 4911. The facility consists of a single industrial boiler burning natural gas to produce steam for a 25 MW turbine/generator set. Two diesel engine/generator sets provide for backup power and are used less than 100 hours per year. A 500,000 gallon above ground storage tank stores the diesel fuel for the backup generators. Three boilers and associated turbines are located near the backup generators and are not used.

The facility is located at 100 North Second Street in the rural city of Lamar in Prowers County, Colorado. The State of Kansas is designated as an affected state located within 50 miles of the plant. There are no Federal Class I designated areas within 100 kilometers of the plant. The area in which the plant operates is designated as non-attainment for Particulate Matter under 10 microns (PM_{10}). This source is considered to be a major source for NOx in an attainment area (Potential to Emit > 250 Tons Per Year) but was constructed prior to the creation of the Prevention of Significant Deterioration (PSD) regulations on 12/5/74 and the adoption of the current regulation on 8/7/80. The facility has not undergone any major modifications which would trigger additional PSD review. Facility wide

emissions are as follows:

| Pollutant | Potential to Emit (TPY) | Actual Emissions (TPY) |
|-----------|----------------------------|------------------------------|
| NOx | 736.7 | 320.9 |
| СО | 53.6 | 23.3 |
| VOC | 1.9 | 0.8 |
| SO_2 | 0.8 | 0.5 |
| PM | 4.0 | 1.8 |
| PM_{10} | 4.0 | 1.8 |
| HAPs | 2.29 | 2.06 |

Potential emissions are based upon 8760 hours/year of operation at maximum capacity and a natural gas heating value of 1040 btu/scf. Actual emissions are based upon the last Air Pollution Emission Notice (APEN) received by the Division (1991 data year). This facility is required to provide an updated APEN in the event that emissions of any of the above air pollutants increase 5% or 50 tons per year, whichever is less, above the level reported on the last APEN submitted to the APCD. Under the guidelines of EPA's Whitepaper for streamlining the operating permit process, actual emissions for the last data year were not required during the application process. Therefore, the Division assumes that emissions from this facility have remained the same or decreased since the last APEN submittal based upon the compliance certification in the operating permit application.

III. <u>Emission Sources</u>

In addition to the equipment listed below, the facility has three (3) grandfathered boilers and two (2) grandfathered internal combustion engine/generators. The boilers are designated as Baddenhauser boiler #1, Riley boiler #2, and Union Ironworks boiler #3 on the plot plan supplied with the application. The engines are shown as Worthington engine/generator #46 and Fairbanks-Morse engine/generator #49. According to records, the boilers are not used. However, in order to keep the equipment from having specific operating permit requirements, a condition was added under Section I that the boilers may not operate without first applying for and obtaining a modification to the operating permit allowing operation. The engines, depending upon operation, may be considered insignificant activities (see

discussion under Section IV of this review document). A condition was added under Section I of the operating permit that states that the engines may not operate more than 100 hours per year without first applying for and obtaining a modification to the operating permit allowing such operation.

The following emission units are specifically regulated under terms and conditions of the Operating Permit for this site:

<u>Unit S001</u> -Combustion Engineering, Model 31VP-18W, S/N: 24869, Natural Gas Fired Boiler (Steam Generator) with a Maximum Designed Heat Input Rate of 318 mmBTU/hr.

Discussion:

1. Applicable Requirements- Unit S001 was installed in 1972 prior to Construction Permit requirements and has undergone no modifications. As the unit is essentially "grandfathered" from existing Construction Permit requirements (Colorado Regulation No. 3, Part B, Section I.A.), there are few applicable requirements. For many pollutants, the unit has no limitations, however, for fee and inventory purposes actual emissions must be calculated.

This unit is subject to the particulate standard for fuel burning equipment as stated in Colorado Regulation No. 1, Section III.A.1.b. The regulation requires that units meet a lbs/mmBTU particulate matter (PM) emission limit (PE) based on the following equation:

PE=0.5(FI)^{-0.26} where FI = Fuel Input in Million Btu per Hour.

Additionally, the units must meet a 20% Opacity Standard (Regulation No. 1, Section II) as described under the monitoring section below.

2. Emission Factors- Emissions from the boiler are produced from the combustion of organic fuels. The pollutants of interest are Nitrogen Oxide (NOx), SO₂, Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Particulate Matter, and a subset of PM, Particulate Matter under 10 microns (PM₁₀). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted due to incomplete combustion. The relative quantities of each pollutant are dependant upon the fuel burned. The main pollutants of concern from natural gas combustion are NOx and CO.

Lamar L&P will be using general EPA approved emission factors. In general, AP-42 emission factors are accepted as representative for this type of boiler and are typically of good quality. EPA Document 450/4-90-003, AIRS Facility Subsystem- Source

<u>Classification Codes and Emission Factor Listing for Criteria Air Pollutants</u>, essentially places AP-42 data into easily used tables. The emission factors from SCC 1-01-006-01 used are:

| | Emission Factor |
|-------------------|-----------------|
| Pollutants | (lbs/mmBTU) |
| NOx | 550.0 |
| VOC | 1.4 |
| CO | 40.0 |
| SO_2 | 0.6 |
| PM | 3.0 |
| PM_{10} | 3.0 |

3. Monitoring Plan- A compliance and monitoring scheme has been developed for gasfired boilers. The scheme has been highlighted on the attached grid titled "COMPLIANCE/SCENARIO SUMMARY - GAS-FIRED BOILERS, ATTAINTMENT AREA LOCATION". Conditions 1.1 to 1.4 of the Operating Permit list the Monitoring and Recording provisions necessary to verify compliance with applicable requirements for this boiler. Natural gas fuel use will measured and recorded annually so that annual emissions may be determined using the specified emission factors given above.

Because the facility is using EPA approved emission factors along with actual fuel usage, by calculation the Regulation No. 1 PM standard will never be exceeded when burning natural gas. For example, when boiler S001 operates at its full capacity of 318 mmBTU/hr, the PE limit is 0.1118 lbs/mmBTU. By comparison, actual emissions from burning natural gas are calculated to be only 0.003 lbs/mmBTU. Therefore, based upon calculations and engineering judgement, compliance with the Regulation No. 1 PM standard shall be assured by burning natural gas.

As previously stated, the boiler has no criteria pollutant limitations except for PM . However, all sources are required to monitor and record emissions for fee and inventory purposes. To this end, the Division has included the emission factors for all pertinent criteria pollutants in the Operating Permit to be used by the facility to calculate their annual emissions.

The Division has determined, based upon AP-42 emission factors and engineering judgement, that visible emissions from boilers when burning natural gas will be insignificant. Therefore, when burning only gaseous fuel, the facility shall be required to burn only natural gas to ensure compliance with the 20% opacity standard.

4. Compliance Status- This facility certified that they were in compliance with all applicable requirements at the time of their Title V Operating Permit Submittal. Based upon the information provided and an inspection of the equipment covered in the application, this facility is considered to be in compliance with all applicable requirements.

IV. <u>Insignificant Activities</u>

A list of insignificant activities was provided with the application. These activities do not pose a significant threat to air quality. These items were placed in an appendix in the proposed permit so that they would be of use during inspections. Of specific interest:

Emissions from 500,000 Gallon Fuel Oil Above Ground Storage Tank

The tank resides on the East side of the facility and is used only to provide fuel for the emergency generators. The surface tension and viscous nature of Fuel Oil results in extremely low VOC emissions. VOC emissions are below 1 TPY. For this reason, fuel oil storage tanks with annual throughput of less than 400,000 gallons are categorically insignificant under Colorado Regulation No. 3, Part C, Section II.E.3.fff.

- Unit #46 Worthington, 1530 HP, 1080 kW, Internal Combustion Engine/Generator Burning Diesel Fuel. Constructed in 1946.
- Unit #49 Fairbanks-Morse, 1800 HP, 1136 kW, Internal Combustion Engine/Generator Burning Diesel Fuel. Constructed in 1944 and Installed in 1949.

These two ICE engine/generators provide emergency power and are exempt from Construction Permit requirements due to their 1940's installation date. The engines are not capable of providing enough power for full service to the Lamar area. However, the engines would be able to provide enough power for vital facilities such as the hospital. As engines they are not subject to the Regulation No. 1 PM standard as ICEs do not meet the definition of "fuel burning equipment". These engines remain categorically insignificant activities under Colorado Regulation No. 3, Part C, Section II.E.3.nnn, provided that each engine does not operate more than 100 hours per year or actual emissions from each engine are less than 5 tons per year.

V. Alternative Operating Scenarios

No alternative operating scenarios were provided.

VI. Permit Shield

The listed regulation citations for the Permit Shield requested by Lamar L&P in the Title V application are identical to the listed Applicable Requirements. The Permit Shield is not intended to shield a source from enforcement of applicable requirements. Additionally, no specific portions of the regulations were given by the source. Therefore, no specific additional permit shield items were included in Section III of the Operating Permit.

VII. Accidental Release - 112(r)

A provision under Part 70 of the Clean Air Act (amended) is the Accidental Release provisions of section 112(r). Under this program, EPA established a list of substances which pose the greatest risk of death or serious injury to humans or extreme harm to the environment. Additionally, a list of flammable substances and high explosives were set forth. Each substance was given a threshold or deminimis level by considering their individual toxicity, reactivity, volatility, flammability, explosiveness, and dispersiveness. Facilities using any of these substances in greater-than-threshold quantities are required to prepare and implement a Risk Management/Prevention Plan for those substances.

This facility has notified the Division that they are not subject to the requirements of 112(r).